

## CII-TCM Assessment & Way Forward



- **An Overview of Tata Advanced Materials Ltd**
- **Value Addition from TCM Assessment Process**
- **TCM Positives in TAML**
- **Way Forward in TCM Journey**
- **Expected Outcomes in TCM Journey**

19<sup>th</sup> August, 1991



**TATA** ADVANCED MATERIALS LIMITED

- ❖ Incorporated in 1989. Commenced operations in 1993
- ❖ Wholly owned Subsidiary of Tata Industries Ltd
- ❖ Three Verticals, Aerospace, Defense, Industrial Applications
- ❖ TAML specializes in the manufacture of carbon fiber composite components and sub assemblies for Aerospace application. Single source Globally, for most of the products
- ❖ TAML manufactures Personnel Armor, Vehicle Armor and other Defense Products by using ballistic materials, such as HPPE and Aramid
- ❖ Aerospace Business is a long gestation business, characterized by upfront investments, long development phase, resulting in extended breakeven period
- ❖ Revenue: ~USD 50 Mn (2008-2016), USD 100 Mn (2020), Over 90% from Exports

## Certifications & Approvals



### Quality certifications

ISO-9001 :2008, AS 9100 Rev C, NADCAP – Composites, NDI and Painting

### Customer approvals won by TAML

Boeing (BAC 5565, BAC 5578, BAC 5317-4, BAC 5332, BAC 5317-2, BA5317-3 & BAC 5514)

Rolls Royce – 37 RPS approvals

Airbus approvals for A350 & A320

Goodrich Corporation, Pratt & Whitney

### Other major accomplishments

GOLD Rating from Boeing and also listed in D14426 in Boeing portal

EASA Audit cleared facility

MRL 6 approval from Airbus

Delegated source inspection authority for P&W and UTAS  
CII TCM Level 3 and TBEM Level 3 certified Company

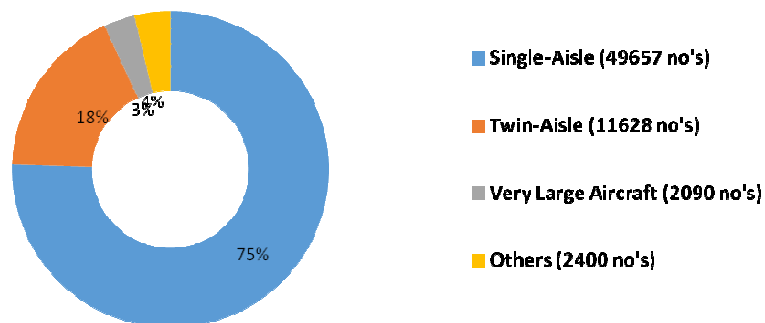


## Global Aerospace Industry – An Overview



- The Aerospace industry will see most of its growth in the commercial aircraft space.
- As per Airbus & Boeing Outlook, in the next 20 yrs, **65,775 aircrafts** will be sold for an total estimated value of **USD 9.22 Trillion**
- *Single-aisle planes are expected to dominate the market.*
- Twin-aisle planes market share is expected to be at 18%.

### Airbus & Boeing 20 yr Sales Forecast



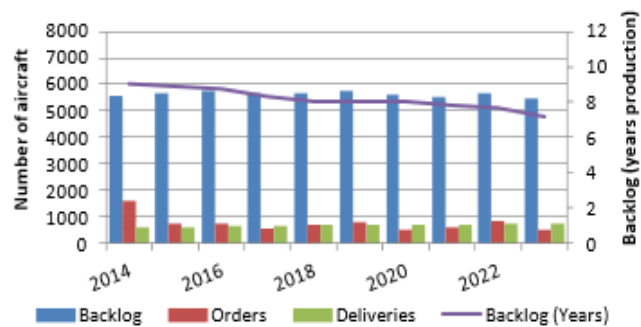
## Performance vs Order book - Airbus



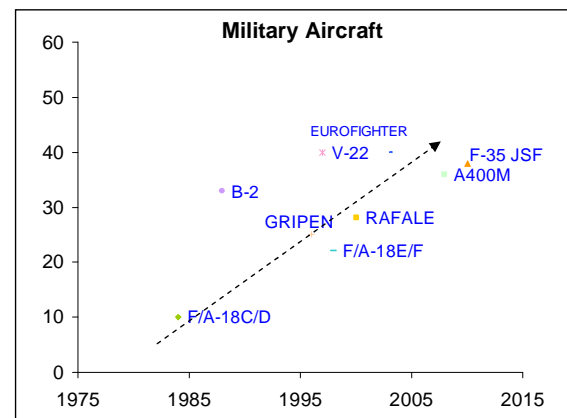
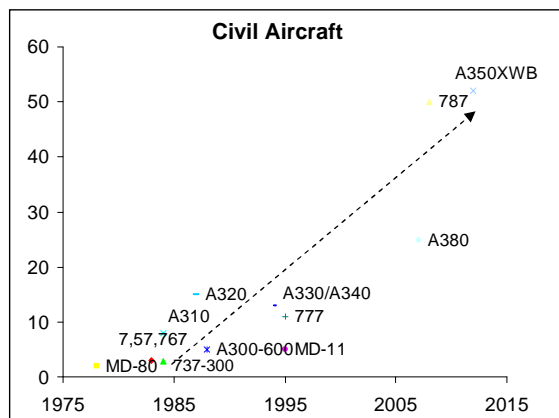
Chart 10a: Airbus Book:Bill Trend



Chart 11a: Airbus Book:Bill Outlook



## Usage of Composites as % of Structural Weight



**Usage of composites has grown steadily over the last few decades.  
Current Composites Aerospace Market USD 25 Bn**

Source: Aerostrategy

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### Reduction in operating costs

- Lower weight → lower fuel consumption/ increased payload
- Lower maintenance costs

### Lower part counts


- Reduced part count leading to lower assembly times and lesser rework

### Technological advancements

- Advanced design & analysis tools
- Higher productivity due to automation

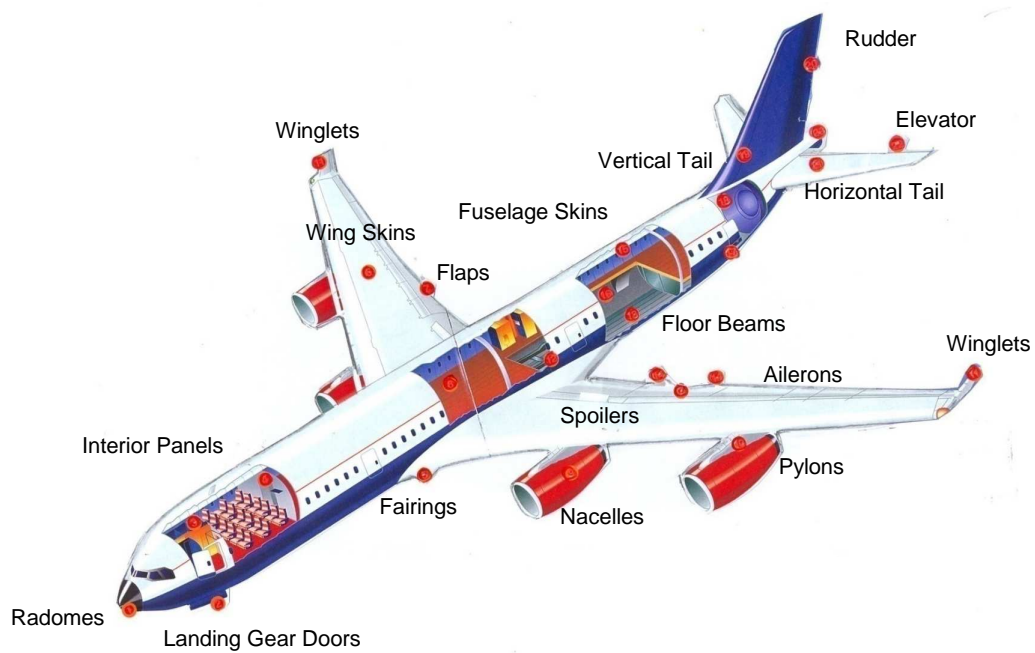
### Higher Acceptance

- Increased confidence of certification agencies

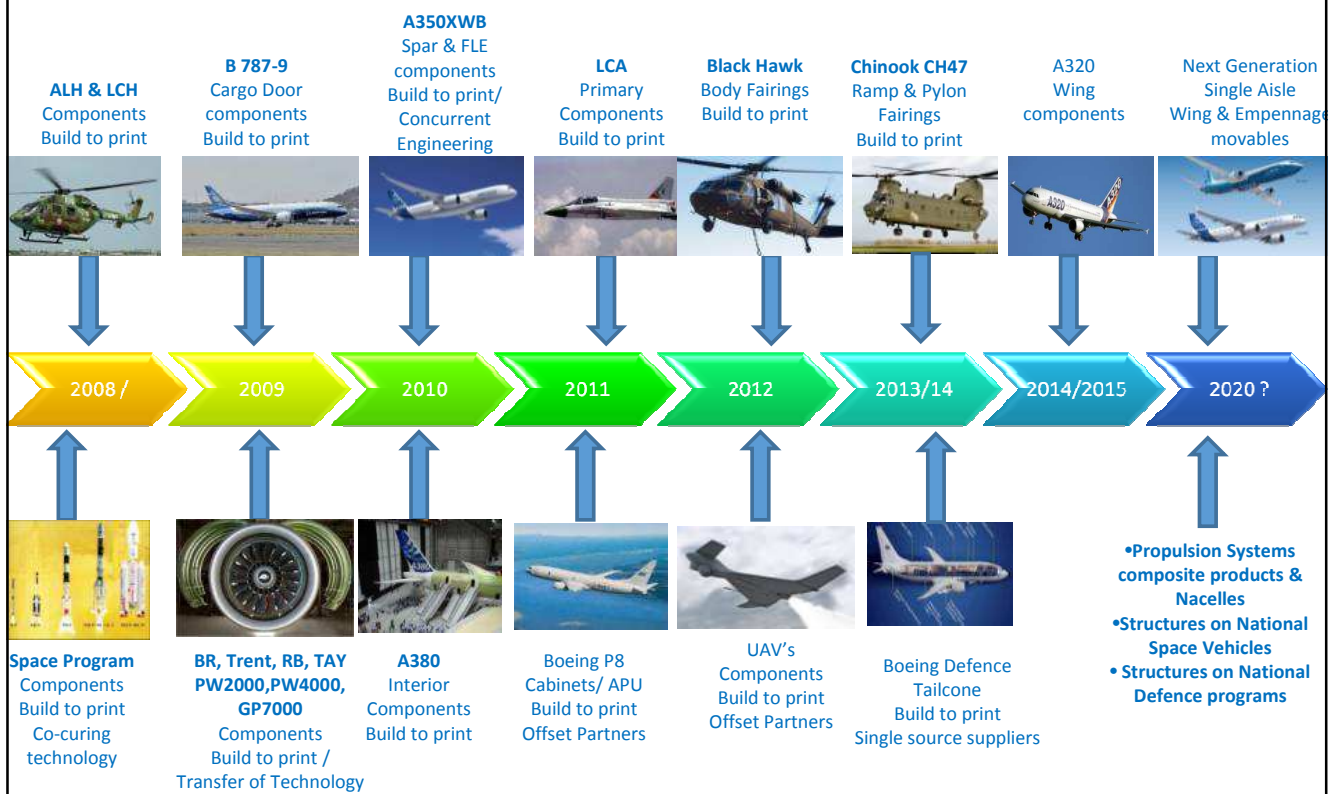


Increase in composites usage

## Composites in a Commercial Aircraft

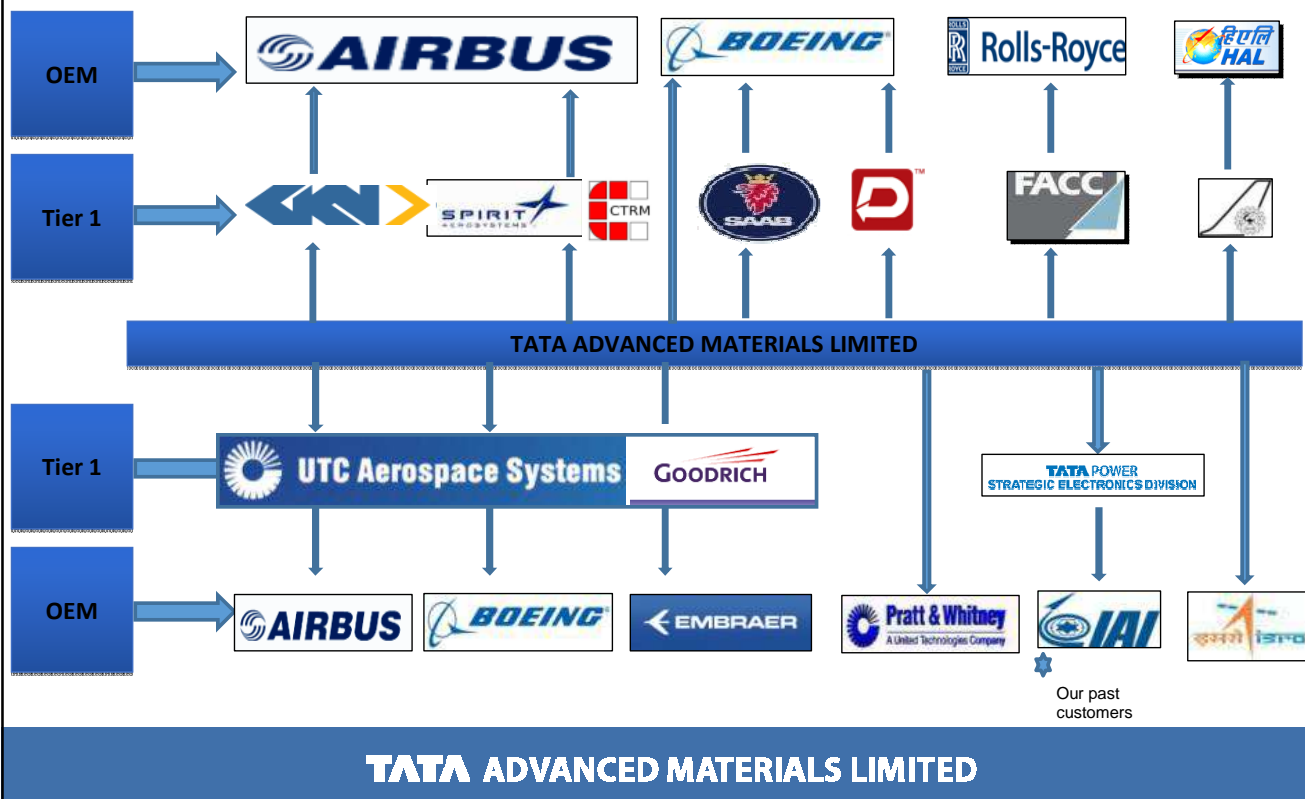


# TAML Aerospace Journey



**TATA ADVANCED MATERIALS LIMITED**

# Customer Portfolio



- TAML's ability to manufacture products to the technical and quality specifications of the customer and deliver the same on time every time (with reliability, consistency) is its core competency.
- TAML operates on long term fixed price USD contracts, where material prices are a pass through. Prices are negotiated with customers on open book approach, based on BOM, machine and labour hours and rates, recovery of production overheads, corporate overheads and margin. Non recurring costs are paid based on milestones or are amortized over the period of the program
- Little or no flexibility in materials, manufacturing and quality processes. Stringent customer oversight and approvals at every stage of manufacture.
- Stable customer forecasts with little or no variability in offtake
- Monopolistic material suppliers and elongated working capital cycle
- TAML's profitability drivers are full utilization of capacity of its equipment, people & other productive assets to generate the required operating margins from each program, with maximum material efficiencies, minimum wastage and minimum COPQ

## Value Addition from the TCM Assessment Process



- Senior leadership of the organization was exposed to various maturity levels of TCM and how strategy should be linked to TCM at each level
- The rating provided a benchmark to establish the robustness of estimation process, cost maturity and transparency in value chain to international customers
- CII TCM helped TAML to understand its current level of maturity and the gaps that needs to be bridged to move up the rating scale
- Assessment Process helped TAML understand the best practices of world class companies in TCM
- Provided valuable inputs to create an optimized organization where capabilities are maximized
- Helped unearth the vast opportunities available in TAML for cost optimization by focusing on both value creation and removal of non-value added activities
- Helped identify activities which would help future performance of the organization
- Drove the importance of instilling an enterprisewide cost culture in the organization from 'Shop Floor' to 'Top Floor'
- Understood the importance of TCM as a knowledge management process and competency building, which should be part of training and development in HR

## TCM Assessment-Positives



- Detailed Estimation Policy and SOP, based on global benchmarks
- Robust Business Plans and their continuous alignment with performance
- Strategic Initiatives across all functions to achieve Strategic Objectives and Challenges
- Cascading of TCM/Kaizen/SGA initiatives across the Organization and focus on driving continuous improvements in Operational Metrics
- Operations & Finance in continuous interaction and alignment to drive down costs and monitor improvements
- Employee KRAs includes at least 1 TCM initiative
- Demonstrated focus on driving down Costs, Overheads, improving Quality and reducing Wastages across Enterprise, Shopfloor and Programs
- SAP/Analytical Tools for real time capture, analysis and control of Operations and Costs
- Metric driven performance measurements, Enterprisewide cascading and continuous optimization
- Articulated Cost reduction strategies and execution
- Employee Reward Scheme to deepen Employee Engagement and Cost Culture across the Organization
- Enterprise-wide Risk framework

## Roadmap and Way Forward in TCM Journey



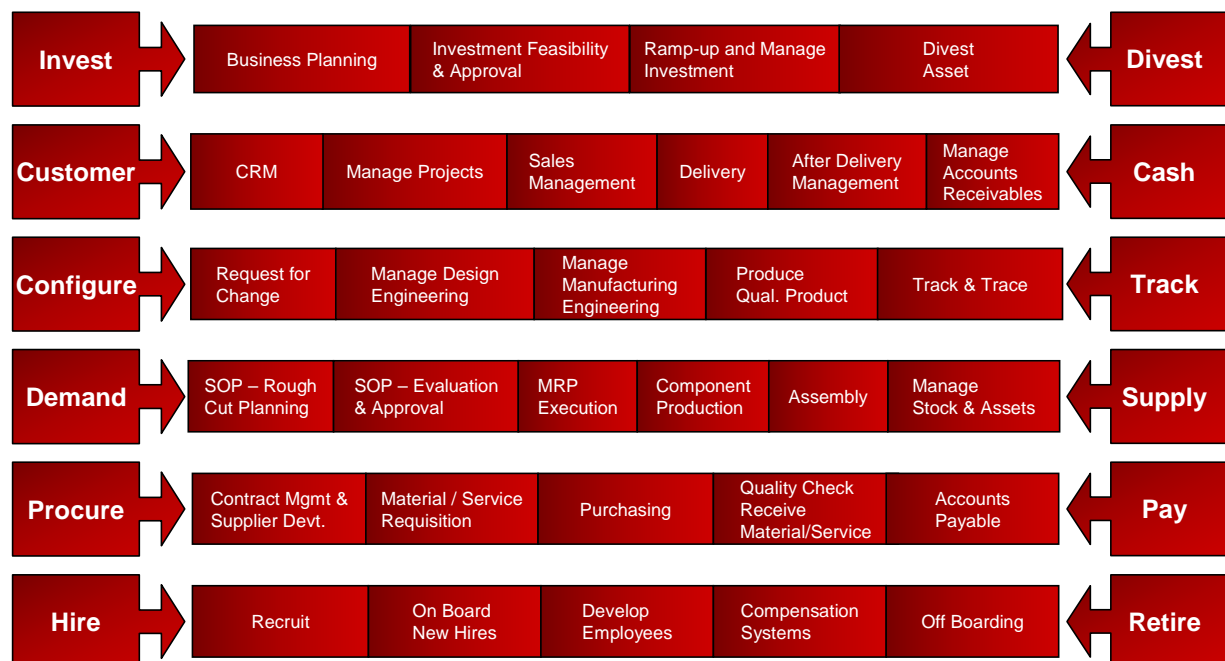
	Recommendations/OFs	Actions
1	<b>Formulation of Business Strategy and Integration of TCM</b> 1. Building TCM footprint in strategy 2. Clear articulation of value proposition 3. Linking cost and value for identified growth drivers in business 4. Linking TAML product group strategy and profitability 5. Business process costing to be interfaced with business process architecture	1. TAML's strategy is being reviewed to position the Company as one among top 3 suppliers of composite structures in Asia by FY2025. 2. TCM is being linked to Strategy and TAML's competitive advantage in segmenting part families, aircraft platforms, technology trends and capability, with clear analysis of investment, resource requirement and ROI 3. Business Process Architecture on 6 end to end processes being formulated with value chain analysis 4. 'True Life Cycle Cost' of a customer based on deployment of resources, technology, development cycle, product and process costs being captured



# Business Process Architecture at TAML



## Six 'End to End' Processes



## Roadmap and Way Forward in TCM journey



	Recommendations/OFs	Actions
2	<b>Aligning Risk Management with Cost Information</b> 1.Expanse of risk analysis to be improved to encompass all functions 2.High impact risks on strategic goals to be identified 3.Evaluation of effectiveness of quality of governance 4.Linkage of risk management to cost management 5.Environmental risks needs emphasis	1. 3 Tier governance structure (functional, apex and Board) created for dynamic risk management and business continuity. 2. Quantification of value at risk, in terms of its overall impact on costs/strategy

## Roadmap and Way Forward in TCM Journey



	Recommendation/OFls	Actions
3	<b>Mapping of strategic product/customer segment in TCM</b> 1. Analysis of customer costs based on true costs/life cycle costs 2. Break revenue & cost based on maturity of the program 3. Volatility of customer level PBT for better differentiation	1. All costs (time, resources, money) being deployed on each customer being captured, to bring out the true cost structure of each customer/segment 2. COPA module of SAP being implemented to address 2 & 3
4	<b>New Product Design</b> 1. Optimizing material cost at design stage before BOM is finalized 2. Building strategic buffers and staying within target cost at product level	Fully customer driven, little scope for variability/flexibility in 'build to print' programs. Possibility in 'design to build' programs

## Roadmap and Way forward in TCM Journey



	Recommendations/OFls	Actions
5	<b>Sustainability &amp; TCM</b> 1. Develop sustainability roadmap 2. Occupational Health & Safety Management System (OHSMS) certification 3. Measurement and improvement on energy intensity/Asset intensity	1. Sustainability Roadmap by Q4FY17 2. OSHMS certification roadmap by Q4FY17 3. Energy intensity/unit of output being measured 4. Solar Power Purchase Agreement to cater to 65% of TAML power requirement
6	<b>Operational improvements and its integration with TCM</b> 1. Deployment of TCM tools, such as lean, 6 sigma, TPM, Kaizen 2. Deployment of visual management 3. Emphasis on cost culture on shop floor 4. Cost of good quality 5. Cost innovation week	1. Monitoring and improvement in OEE, OTIF, RFT, waste and scrap reduction 2. Kaizen, SGA, TOC in operations, 3. Automation of operations by way of barcoding machine/labour hours 4. Visual management at shopfloor, open house meetings, reward scheme 5. strategic sourcing, indeginization, vendor managed inventories

## Roadmap and Way forward in TCM Journey



	Recommendations/OFls	Actions
7/8	<b>Maturity of cost accounting process</b> <b>Cost Centres/Cells</b> 1. Assess cost impact of over engineered processes/products 2. To transition to true cost structure of a customer by capturing cost of serving a customer, cost of efforts and further dissecting the common overheads 3. Enabling COPA for process efficiency	1. Fully customer driven, little scope for variability/flexibility in 'build to print' programs. Possibility in 'design to build' programs 2. COPA being deployed by Q4FY17
9	<b>Integrated data warehousing and Business Analytics</b> 1. Segment reporting, competitive data 2. Leveraging IT for knowledge management	1. COPA deployment by Q4FY17 to aid segment reporting 2. Roadmap on knowledge management by using IT being formulated

## Expected Outcomes on scaling up TCM Maturity Model



- Aim to be Level 4 by Q4FY18
- Cost Leadership in composites manufacture and being a cost benchmark in the Industry
- Strategy and Roadmap to be fully aligned with TCM
- Profit Equation of Sales-Profit=Cost/Target Costing
- Deployment of Cost as a Strategy across the organization
- Product and customer segmentation to monitor performance and drive strategy
- Target Costing in New Product Development Process
- Embedding sustainability in TAML's culture
- Well defined HR processes for TCM competency building and knowledge management process
- Robust use of IT/Analytics for continuous analysis and improvement

**Thank You**